DOCUMENT RESUME

ED 030 898 CG 003 970

Implications of New Technology for Counselor Education.
American Personnel and Guidance Association, Washington, D.C. Association for Counselor Education and Supervision.
Pub Date Mar 69
Note-59p.
EDRS Price MF-$0.50 HC-$3.05
Descriptors-*Computer Science, Counselor Attitudes, *Counselor Educators, *Counselor Training, Electronic Data Processing, Group Activities, *Innovation, Occupational Information, *Video Tape Recordings, Vocational Counseling

This report includes papers reviewing new technology and methodology currently being used in counselor education. It is the result of a survey of innovations in counselor education programs in all geographic regions. An overview of computer information systems as they relate to guidance and counseling is presented by Dr. William F. Moorhouse. Dr. James W. Rollings suggests criteria to be considered in the selection of a data conversion system and discusses several alternative systems. Dr. Donald Forrest summarizes various applications of video tape recording (VTR) equipment in counselor education programs. A list and description of basic VTR equipment is included. In discussing the implications of technology for vocational counseling, Dr. Henry Brito emphasizes the need for application to the dissemination of occupational information. Project VIEW in San Diego County, California, is described as one example of information processing for vocational counseling. Dr. Ethel Anderson discusses ways in which the individual counselor can relate his own behavior to the innovations reported. She also suggests group work as a new technology. (NS)

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IMPLICATIONS OF NEW TECHNOLOGY FOR COUNSELOR EDUCATION

A COMMITTEE REPORT

ASSOCIATION FOR COUNSELOR EDUCATION AND SUPERVISION

MARCH, 1969

IMPLICATIONS OF NEW TECHNOLOGY FOR COUNSELOR EDUCATION

a

Committee Report

Association for Counselor Education and Supervision

March, 1969

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AN OVERVIEW OF METHODOLOGIES AND NEW TECHNOLOGY IN COUNSELOR EDUCATION

by

R. N. Sawyer[1]

Technological changes, and especially those associated with what we have come to term automation or cybernation, have received widespread attention in the general field of education and specifically in the area of counselor education. In practice, it is often difficult to disentangle the effects of technological change on any given profession.

Historically, changes in the social sciences have lagged behind changes in both the hard and applied sciences. I would suspect that a significant portion of the lag is attributable to the security that is yielded when a familiar method is repeated and the lack of an awareness as to what technological changes are taking place and how the changes are applicable to our needs.

Ideally a system of education should maximize the probabilities that the culture will not only deal with the relevant problems but steadily increase the capacity to do so. To design such a system, we must be aware of: (1) what problems face the culture; (2) the kinds of human behavior that will lead to the solution of these problems; and (3) what kinds of instruction will generate this behavior. The technology of which we speak is concerned with the last of these. The technological revolution in education which Pressey envisioned in the 1920's is here.

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PURPOSE

President Gilbert D. Moore has charged this committee with the responsibility to explore and provide information pertaining to the methodologies and new technology that are currently being utilized in the education of counselors, to the end that ideas may be exchanged, modifications undertaken, and future plans for utilization may be created. This brief overview will attempt to provide the membership with an idea of what is being developed and tried in various institutions across the United States. The overview is by no means exhaustive or evaluative. More detailed information relative to specific techniques will be provided by the balance of the committee.

METHODOLOGY AND SAMPLE

In an attempt to survey counselor education programs from all geographic regions, a letter was forwarded to at least two different counselor-educators at different institutions in each of the fifty states. A total of one-hundred thirty requests for information were forwarded to counselor educators. In essence the letter requested a brief description of any innovative approaches and new, unique equipment that the counselor educator was employing in his respective program. Further, a request for information was published in the Guidepost.

RESULTS

While the percentage of return on the requests for information was not overwhelming, contained were many innovative and creative approaches to preparing counselors. Undoubtedly the individuals not responding and those not contacted are not bound by the traditional and are attempting to create new approaches. Realistically, the term "innovative" has a multitude of interpretations, and what one counselor educator perceives as traditional may be seen

as innovative by another individual within the profession. Further, some of the techniques reported are not unique in theory but in terms of application do possess unique qualities.

In the realm of technology, the computers are playing a primary role. This is evidenced by Harvard University's information system for vocational decisions (Tiedman), Clark University's computer generated occupational bibliography of occupational information (Kroll), Kansas State Teachers College's data conversion systems (Rollings), and the University of Texas (Appel) and Wisconsin State University (Mayer) are utilizing computer aided instructional programs as part of their regular program. Attempting to simulate actual situations, Stanford University has developed a sequence of vocational problem solving experiences for simulating exploration and interest (Krumboltz), Eastern Montana College (Copple) has established an elementary guidance simulator and Arizona State University (Demicell) has developed a psycho-emotional impact series for use in facilitating group interaction. The recall process stimulation studies at the University of Michigan (Kagan), University of Indiana (Kurpius) and Texas A & M University (Roach) and various visual and audio stimulation devices also represent a promising new technique in counselor education. Numerous universities have established video tapes and tape libraries (DePaul University, Dinkmeyer; Marist College, Miller; Oklahoma State University, Seals; Purdue University, Shertzer; University of Colorado, Sease; University of Delaware, Mankin; University of Illinois, Delaney; University of New Hampshire, Boy; University of Utah, Malouf; University of Wyoming, Miller; and Wisconsin State University, Mayer). Further, the University of Wyoming (Miller) has developed an extensive library of short counseling lead audio tapes.

Common to several counselor education programs was an emphasis on sensitivity training, both for further self development of the counselor in training as well as the introduction and refinement of a relatively new methodology. Further the analysis of both client and counselor behavior in behavioral terms is being pursued in numerous institutions. Micro-counseling and attending behavior and micro-teaching units are being employed in pre-practicum situations at Colorado State University (Miller, Morrell, and Normington) and the University of Wyoming (Miller). The verbal interaction between client and counselor is being analyzed at Arkansas State University (Traux) and the University of North Dakota (Hountras) to aid the counselor trainee in appropriate communication. Also, the communication with a group setting is being studied at various institutions such as the University of Minnesota (Schmidt) and Florida State University (Cottingham). Further, the University of Hartford (Pepyne and Berrazza) are employing a counselor repertoire development program to provide a viable repertoire of discriminating and reinforcing stimuli for use within the interview setting. Attempting to combat the problem of practicum clients, some programs are utilizing actors, paid clients, and coached clients. Further, some institutions are employing team counseling (counselor & co-counselor).

The majority of colleges and universities contacted reported a dedication to revision of course content within the counselor education programs. The spectrum of revision was from a non-course oriented program to a core curriculum approach.

In short, there appears to be a considerable amount of activity within the profession in terms of innovation and change. Obviously many of the previously mentioned techniques are still being researched and revised.

COMPUTER INFORMATION SYSTEMS - A NEW TOOL IN GUIDANCE

By William F. Moorhouse

The field of Guidance and Counseling has a major potential tool in the use of computer information systems. Certain members of the profession are currently very much taken up in the development of computerized guidance support systems and related files of data from which personalized information is drawn to assist young people and adults in the guidance function.

The intention of this paper is to inform more counselors, guidance coordinators, and counselor educators first, about the technology which exists and, second, about projects in which computer information systems are under development to provide more complete and relevant guidance assistance. The hope is that more guidance workers will be motivated to understand information systems and will look forward to becoming users. A shared use can make development of an operation financially feasible.

The implication for counselor educators is that they must teach counselors how to function more effectively with the assistance of a "machine" and how to work with counselees who are receiving personalized information from a computer system and auxiliary audio-visual materials. Also implied is a revision of theories that will be based in part upon research which has become possible with information system development and use.

While still in the process of development, there are several emerging uses for computer information systems in education, computer assisted instruction (CAI) being the major area. CAI systems are also suited for computer assisted guidance and, in fact, some are an adjunct of student's school records.

Information systems have been made possible by the development of storage media and devices which can store millions of characters of data at a relatively low cost as compared to computer electronic core storage. Also, the use of terminals that can be placed in locations remote from the computer to access the stored information and update the information, has expanded the capability for the use of computers in instruction, research, and information services. The capacity of newer computer systems to serve several jobs and terminals simultaneously has made it possible for one to use a very large computer system only for the moments it is needed.

In the U.S., hundreds of school districts, junior colleges, and four-year institutions have computers. However, only certain of these have computer systems with the capabilities for information system processing and for time-

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sharing where part of the input and output can be sent and received at the user's site, such as the classroom, a library, media center, and counseling office. The costs for the type of computer system, the staff, and the system of computer programs on which information processing and/or remote access can be obtained are too great for most school systems to finance alone. It has been found feasible to join together and to share the services of a computer center on a regional basis. This concept is under development or in operational stages in states such as California, Illinois, Iowa, Massachusetts, Minnesota, Michigan, New York, and Oregon.

What is a Computer Information System?

A computer information system is the intricate procedural plan (system design) which encompasses an operation where information is needed and obtained for use through a selection and synthesis of facts. This includes the receipt of factual input, editing, storage, processing and production of informational output by machinery called the "computer system."

The computer system comprises a central processing unit (CPU), or computer, that has devices attached which receive input, store data, and produce output. The CPU does the processing with the help of the attachments and related control devices.

Common examples of the input and output (I/O) and core storage devices are: card read/punch, magnetic tape drives (transports), magnetic disk drives, storage drums or data cells, printers, remote I/O terminals which have typewriter (Alpha/numeric) keyboards and/or video type data display stations, slide projectors, and Teletypewriters.

The computer information system, in addition to the systems design and machines (hardware), also includes a set of coded machine operation instructions (computer programs) which are supplied by: the computer manufacturer, inter-change among user groups, government-financed projects, regional or cooperative educational data processing centers, and local computer programmers. Computer programs are called "software."

In a broader sense, the information system also includes the many people who prepare and submit input, keypunch operators, communications workers, input control clerks, computer operators, output preparation clerks, the systems analysts who developed the systems design, the professional personnel who make use of the information, and the research and conditions on which the decisions to be made within the system are based.

What is a Computer Information File?

Characters such as a, b, c, 1, 2, 3 which comprise data (or facts) such as: a student's name, date of birth, marks in courses, test scores, credit hours, or job experiences, are stored as magnetic impulses on various media

in the devices attached to the computer. For example, upon request the file of a particular student, or student with certain characteristics, can be selected and duplicated in the computer core storage area for whatever processing is specified. The student's file can be left as it is, updated, corrected, or have data added or deleted as based upon the instructions or options which have been programmed into the system.

Files can be set up to contain any alphabetic or numeric data or facts. A few examples are: selected useable facts in a student's school record, current and/or longitudinal; a list of course offerings coded as to sequence and level of difficulty within subjects; and a list of entry job openings coded to indicate minimum qualifications. Some of the alphabetic information that can be classified is coded numerically for ease of computer processing; however, an index to the codes is also stored and is used to decode the information for ease of use in output. While the files are sometimes called "data banks" the selected, processed, and interpreted data becomes information. Thus, the name "information system."

Usually, several files are contained in an information system. For example, to assist a group of students in locating prospects of financial aid for a college education, three files might be employed: a file of information about each student which contains data commonly used as criteria for scholarship and financial aid selection; a file of descriptive information on financial aids coded to include the level of pupil characteristics and combination of student characteristics required for consideration for each financial aid resource; and a file of colleges, including addresses, keyed to the various financial aids available. This system could inform students as to which colleges they might each apply for financial aid, or list financial aids likely to be available for a particular student at a college of his choice, or list names of students who meet the criteria, for use by college personnel as a partial basis in the screening process for financial aids awards.

Files not needed for immediate access and duplicate files are frequently stored on magnetic tape and kept in a fireproof vault. For example, a reel of tape which costs $25-$30 might contain ten million characters of data. The tape can be used over and over the same as regular audio recording tape. Some form of file back-up is usually kept in the form of cards and tape or the original input documents are saved for a period of time so that the files can be recreated if they are "wiped out" by processing errors.

How Does Information Get Into the File?

The initial building of a file is a major task and expense and keeping it updated requires constant effort. A system design is necessary to determine what information is needed and available, how it can be coded, and the sequence and space (number of characters) required for each unit of data. Data can only get into the storage device initially through the clerical task of striking a keyboard or marking marks on a form or card. Audio, spoken voice, I/O is not yet readily available or applicable.

For example, to enter a name, the original standard method is to strike the keys on a keypunch machine, thereby creating a card which is later entered into the computer through a card reader. Another example of input is in the form of marks made on cards or sheets which are sensed by a mark sensing or an optical scanning device which punches cards, or transfers the data to magnetic tape, or enters it directly into the computer. A terminal with a typewriter keyboard may be attached to the computer, which can be used to type out the name and enter it into the computer system directly. Elsewhere in this report, Dr. Rawlings describes various data collection devices and related conversion systems.

Frequently, a certain amount of research must be done or be available before a file can be developed. For example, in order to assist the students to obtain suggestions of courses where they are likely to find success, a study must be conducted to determine the relationship between student characteristics and performance in various course offerings. The appropriate factors to include in the student file and course file must be determined before the desired comparisons can be made.

The cost of developing initial input for a file and of continuous updating can be reduced if many users can share in the use of the file. For example, a file that was developed at one university media center which contains a comprehensive list of educational film descriptions and classifications, is now in use at several audio-visual centers. They cooperate in keeping the file up to date and complete.

In California as each of the Regional Educational Data Processing Centers was initiated, it was deemed too costly to enter pupils' entire existing cumulative records into the Pupil Personnel Information System. Instead, at the end of each semester, the current information (marks, test scores, attendance, etc.) for each pupil was entered. In fact, in that system the "Historical Student Data File" is a by-product of data which is collected in the "Current Student Master File." The latter file is built in steps as report cards are produced (via data processing), as test results are printed, as attendance registers are produced, and as updated cumulative records are printed. After eight semesters, a student who first entered the system during the ninth grade has his full high school record stored.

What Are Some of the Uses of Computer Information Systems in Guidance and Counseling?

Computer information systems can be used to provide major information processing tasks in the counseling operation. More appropriate, comprehensive, and relevant guidance information can be drawn from computer information files for various specific individuals than by any other means within a practical amount of time. The task of guidance and personnel workers is then reduced to concentrate on assisting individuals to relate personally to the information, and the time of the counselor becomes available for more counseling. Groups can be formed on the basis of certain characteristics to carry out other aspects of guidance services.

The pupil personnel information system also becomes more readily available to teachers, and information can be presented in an accurate, complete and relevant form. When computer assisted instruction systems become available, they can collect information on the day-to-day progress of each student and certain facts useful in diagnosis of learning capabilities. Such feedback from CAI can be added to students' personnel files, thereby enhancing the information available to the counselor.

A computer information system can be organized to include all the facts about students which are currently used, such as the basic school records plus indicators of current self-concept, interests, and goals. The school's curricular offerings, requirements for graduation or various diplomas, and yearly calendar can be prepared in file form. Local and regional entry placement opportunities in education and employment can be set up as based upon current follow-up studies. In time, perhaps governmental agencies, college officials, and corporations will provide input for files, which contains facts about current national or regional placement opportunities coded by selection requirements.

All available educational, occupational, and perhaps certain personal-social-economic information which pertains to persons who have reached various levels of education and/or experience can be entered into the system. Procedures for continuous updating and corrections must also be instituted. Counselors or other qualified personnel must be involved in overseeing that input is appropriate and accurate, particularly in the case of individual's personal records.

The uses of such an information system by all personnel are endless. The potential for research is staggering. Confidentiality can be maintained by stripping records of name or other identification for all uses where individuals have not given permission for release of their personal file. The counselor's time can be concentrated on working with persons who have received (or are currently receiving) information which has been tapped for each individual personally, based upon personal request, performance records, or any related data.

It is likely that an individual's motivation to achieve training or education will be enhanced when he can receive realistic assurances that certain placement opportunities are likely to exist for him, if he completes a certain program of training or education in which he has a chance for success. The computer information system can be used as a major source for decisions in curriculum development. The offerings for a particular educational institution can be based both on the characteristics of the current student population, such as the numbers of students ready for a certain level of instruction in each subject area, and also more specifically on the needs of local society in the form of skills to perform certain jobs or background to continue in educational experiences.

We have only made a slight beginning in the field of education to use computers. Brief descriptions of a few projects related to guidance information systems are included in the remainder of this paper. Names of individuals and corporations are included, as well as certain references where more detail may be obtained.

Information System for Vocational Decisions (ISVD)

The purpose of ISVD is to assist persons in the process of vocational choice. A very complete description of this project is contained in the ISVD Second Annual Report, 1967-1968. ISVD is under development by David V. Tiedeman, Robert P. O'Hara, Allan B. Ellis and a host of associates. It is a federally financed system, with initial research scheduled for completion in June, 1969, which includes a pilot testing in the Newton, Massachusetts public schools. Dr. Tiedeman, well known in the guidance profession for his work in vocational theory, refers to the ISVD as a "guidance machine." He includes a complete description in a mimeographed paper entitled, Can a Machine Counsel?

Following are a few quotations from the Report.

> "The major objective of the ISVD is to improve vocational decision-making through the use of a computer-based guidance system. . . The student can relate knowledge about himself to data about education, training, and work, and thereby create a body of information on which he can base his career decision. . . The student can conduct a dialogue with a computer, while the counselor assists in interpreting and evaluating the results of the dialogue."

The ISVD includes information files about educational, military, and vocational opportunities. Descriptions are given of the system design, preparation of data files, software and the very interesting counseling scripts for college preference, trade school selection, job preference interviews, etc.

ISVD is being developed with the cooperation of New England Educational Data Systems (NEEDS) which is one of the original regional educational data processing centers in the nation. Terminal equipment includes a video display device, a tape recorder, random access slide projectors, and a hard copier. The software for the audio visual devices which are activated by the computer is still under development.

For further information, write to Dr. David V. Tiedeman, Professor of Education, Harvard University, Cambridge, Massachusetts.

California Regional Educational Data Processing Centers

Several educational data processing centers were established in California with the aid of federal funds to provide a system of pupil personnel services which initially included enrollment, student scheduling, grade reporting, attendance accounting, test scoring, and production of a report at the end of the semester which contained output from the above services on a single form called the California Guidance Record. Information is stored for each student during his school career.

The system is operational for the secondary school level, and considerable progress has been made in the development of elementary school services. The files of student information stored at the various regional centers are compatible

with one another on the basis of uniform data elements and coding of data. Cooperation among the centers is coordinated by Mr. Robert Howe, Director, Data Processing Project, California State Department of Education, 721 Capitol Mall, Sacramento, California, who can supply detailed information.

School districts contract with regional centers and pay about $4 per pupil for forty to fifty input and output items and reports per pupil each school year. This fee includes updating and maintenance of the information system files for each pupil.

A file for a pupil is initiated by the receipt of a Student Data Transmittal Form, which is an enrollment form, from a school building which includes a student's name, sex, enrollment code, grade, attendance category, and school location. Other information such as address, telephone number, etc. may also be sent in initially. The computer system assigns a unique student number which is reported back to the school, along with the input information for verification purposes. From this point on for the remainder of the student's school career the Center provides various types of input documents which contain the student's number and other identifying information. Students, teachers, counselors, and other school personnel report additional information on the input forms as it becomes available in the school.

For example, the test answer sheets or answer cards are provided with preprinted student number and name. Students mark answers to test items without the necessity of entering identifying information. When the tests are scored at the Center, the usual output in the form of lists, labels, etc. is provided, but the results are also added to each student's file. In the case of grade reporting, or mark reporting as it is called in California, each teacher is supplied with a roster of students which is precoded with marks which identify each particular class in each building. Teachers make marks in positions following each pupil's name to indicate grades in the course and comments. The rosters from each class are processed in mark sense or optical scanning machines, marks for each student are entered into the computer system, and output is in the form of complete report cards in several copies, honor rolls, analysis summaries of marks assigned in each class, and the marks are also added to each student's information file.

Many of the clerical tasks previously assumed by counselors have been eliminated. Most of the data goes back and forth between schools and centers in the form of paper input and output documents. Now that the system is operational, plans are to install remote terminals in some schools for random access and updating of student files. A system of school business services has been under development and when it is ready to make use of remote terminals, there will probably be enough of a volume of use to make them financially feasible.

Information for Counseling Employment-bound Students

A follow-up study was conducted among recent graduates of several high schools in Oakland County, Michigan which utilized the computer equipment of the Oakland County Schools, Campus Drive, Pontiac, Michigan. However, this study was not of the usual sort. First, a basic file of information was available on each

student and certain information was added to it just prior to their graduation. A few months later a follow-up questionnaire was sent to each student which was premarked with student numbers and was designed to be read by an optical scanning machine.

The envelopes were addressed with labels produced by the computer from the student file. As questionnaires were returned the responses were added to each student's file. Mailing labels were generated by the machinery for students who had not returned the questionnaires and a second mailing was made. After a period of time school counselors were each provided with a list of former students who had not yet returned follow-up questionnaires. The lists contained the last known phone number and the name and phone number of the student's best friend (which had been stored in the file prior to graduation). Counselors made personal contacts and in some instances completed the questionnaires over the telephone by obtaining information from parents about what their children were doing. Through this system over a 98% return was obtained through minimum effort on the part of counselors.

The computer system, of course, was used to summarize and report the findings of the study; however, the entry placement opportunities which were obtained by each student was also related to many bits of information contained in school records. The counselors then had a type of local educational and occupational information which had not been available previously. They were able to work with students still in school and relate the characteristics contained in their school records and their stated interests with the range of opportunities that had been obtained by previous students with similar qualifications. The data could be related to the opportunities obtained by students in the several high school region or each specific high school.

We understand that Oakland County Schools currently has a grant to continue this project and perhaps information can be obtained by writing Dr. William Emerson, Superintendent. Dr. William Moorhouse, the originator of the system, is now employed at the University of Wyoming, Laramie, Wyoming.

Integrated Education Information System

The McComb County Intermediate School District in Michigan recently received a $300,000 grant to develop a system of information processing and transmission that would make optimum use of the existing and proposed data processing equipment and personnel of the ninety-three school districts of the Detroit metropolitan area. We understand that Dr. Robert Lutz has been named Director of the project and that the Oakland County School Staff, mentioned above, will provide major assistance and data processing equipment.

Educational and Career Exploration System

International Business Machines, Advanced Systems Development Division, has announced a project that is somewhat related to ISVD. In fact, David Tiedeman is one of the reviewing consultants. The IBM Project director is Frank J. Minor,

Ph.D., IBM Systems Development Division, 2651 Strang Boulevard, Yorktown Heights, New York 10598.

A brochure is available which describes the system and shows students carrying on an "interview" with the ECES by operating a terminal connected to the computer. The terminal consists of a viewing screen, a keyboard, and a typewriter. The screen displays printed and pictorial information as well as questions for students to answer. As students enter questions, the screen automatically displays new information for them to examine. The typewriter prints messages based on student answers.

The System begins with the student giving a self description and supplying the information about the type of work and other preferences which he has. The System supplies information about the world of work and relates this to the student's self-description, tested interests and abilities, and high school grades. ECES gives additional information on occupations the student wishes to explore in depth.

It provides a similar exploration in the world of education and provides information about specific courses, areas of study, and related careers. This is followed by another routine which assists students to choose a school or college. Since this project is rather new, we assume that this system is in basic stages of development, because there is no mention of where it is in use or if it is operational.

System Development Corporation

The System Development Corporation, 2500 Colorado Avenue, Santa Monica, California has pioneered the development of several systems of interest to persons in Guidance and Personnel work. Following is a list of a few of the technical reports which are available:

1. Explorations in Computer-Assisted Counseling, by John F. Cogswell and Donald P. Estavan, August, 1965.
   This describes the development of a computer system which was based on recordings made of counselor's verbalizations in two situations (1) as he thought aloud while analyzing the student cumulative records prior to interviews and (2) as he conversed with students during interviews. From this, automated interviews were developed which could be conducted on a Teletypewriter under control of a computer in a time-sharing mode. This automated interview program reviews student progress, collects comments from the student, reacts to student plans, and helps the student plan a schedule of high school courses.

2. The Design of a Man-Machine Counseling System, by John F. Cogswell, C. P. Donahoe, D.P. Estavan, and B.A. Rosenquist, September, 1966.
   This describes a program developed for pre-interview appraisal which (1) accepts input such as school grades, test scores and biographical data, (2) analyzes the data according to the inferred model of the counselor's decision-making rules, (3) prints out evaluative statements. This program

is part of the system described in the article above and assists in the counseling operation through automated interviews which helps students in the areas of course programming, post-high school educational planning, and vocational exploration. This system is being implemented in a large junior high school in Los Angeles.

3. Exploratory Study of Information-Processing Procedures and Computer-Based Technology in Vocational Counseling, by J.F. Cogswell, 1967. This paper provides evidence that counselors spend too much time with information processing chores, and that they would like to alter the system to better meet the needs of the students. The report discusses certain dangers in the use of computer systems for guidance work such as privacy of personal data, misuse of prediction systems, and alienation of humans subjected to computer processing. Measures to combat these dangers are suggested.

Manpower Administration Recommendations

In June, 1967, the U.S. Department of Labor Manpower Administration published "Career Guidance", a report of the sub-committee on career guidance of the Committee on Specialized Personnel. Several recommendations were made by this group including the following which appears on page 37, "The counseling profession should exploit modern information technology to supplement its individual and personal approach to guidance." In addition to giving several reasons for the recommendation, mention is made that the U.S. Employment Service is using and expanding an interstate Labor Inventory Communications System (LINCS) to serve placement needs. The report also mentions that the U.S. Office of Education is encouraging the development of information systems for individual states with the capability of providing inputs to a multi-state system, including the Basic Educational Data System (BEDS) and the Vocational Education Information System (VEIS). Reference is not made as to the location of these projects.

Palo Alto Unified School District Data Processing Services

Dr. Murray Tondow, Director of Educational Data Services, Palo Alto Unified School District, Palo Alto, California, will be willing to send you a very complete description of the services offered by his department in the form of reprints of two articles he has written within the past year. A computer interview dialogue which assists ninth grade students in making educational plans is included in the article entitled "Computer Utilization by Schools: An Example" which appeared in the International Review of Education, Volume XIV, 1968, No. 2. Dr.Tondow also includes an easy-to-understand overview of the many uses of computers in education. The counseling interview system is based on the SDC Research Reports that were previously listed. Palo Alto schools are among the leaders in the nation in the development of operational pupil-personnel and other educational computer systems.

The Follett Counseling Information System

The Follett Publishing Company has announced a computer-based group guidance program service that can be purchased by schools. This system was developed by Dr. Murray Tondow and Dr. John Loughary, Professor of Education at the University of Oregon. Complete information can be obtained by writing Mr. Cal W. Bowman, Follett Counseling Information Service, 579 University Avenue, Palo Alto, California 94301. The program includes assistance from a Follett systems specialist, processing of local school data and provision of materials for use in counseling and group guidance for ninth and tenth grade students and their parents are provided with a realistic approach to educational and vocational decision-making.

Total Information for Educational Systems (TIES)

Another regional center is being developed by Dr. Thomas C. Campbell, Director of Educational Services, Minnesota School District's Data Proccessing Joint Board, 1925 West County Road, #B-2, St. Paul, Minnesota 55113. The TIES system will provide all-school data processing services for instruction, guidance, management, etc. Initial services are planned for spring, 1969.

Computer Assisted Occupational Guidance

Dr. Edward A. Campbell is coordinator of the Computer Assisted Occupational Guidance Project at Pennsylvania State University, University Park, Pennsylvania 16802. The system makes it possible for a student to select a specific occupation or job that interests him and receive card information about it. He may ask the computer to present him with a list of jobs commensurate with his interests and aptitude. A typewriter terminal is used. A tape recorder presents actual workers' comments and feelings in regards to specific occupations. A slide projector is used to graphically present and illustrate typical tasks performed in a specific occupation. This system is easily operated by the counselor or student. It makes use of the student's scores on the General Aptitude Test Battery. Dr. Campbell recently presented a paper at Ohio State University, Columbus, Ohio, entitled "Systems Under Development for Vocational Guidance". Copies are available through ERIC, No. ED 011 039.

Iowa Educational Information Center

Perhaps you have heard of the Card Pack System, which is used to report data about the pupils which is collected in the schools and entered into a central data bank. For more information write Dr. Ralph A. Van Dusseldorf, Director, Iowa Educational Information Center, University of Iowa, Iowa City, Iowa 52240.

Counseling and Personnel Services Information Center

This Center is referred to as CAPS. It is the clearing house on Guidance and Personnel Services for the Educational Resources Information Center (ERIC).

Copies of all publications and research in the Guidance and Personnel Services field are collected and placed on Microfiche and are available either in that form or in hard copies. All persons in our field should be on the CAPS mailing list. Write to Dr. Garry R. Walz, Director, ERIC-CAPS, University of Michigan, Ann Arbor, Michigan 48104. Ask to receive their publication, The Capsule. For a complete and up-to-date listing of all ERIC documents, subscribe to Research in Education. Order number FS-5.77. Available from Superintedent of Documents, Government Printing Office, Washington, D.C. 20402. The annual subscription cost is $11.00. The ERIC references are catalogued and referenced according to subject categories by a data processing system. In time it will be possible to request a listing of publications which pertain to a certain subject or combination of subjects. However, the research publication listings do include very adequate cross indexing. Dr. Walz and his staff conducted a workshop on information systems for pupil-personnel services at the APGA convention in Dallas, Texas, 1967, which was well received.

SEARCH College Selection by Computer

SEARCH, 8 Oliver Street, Boston, Massachusetts 02109 is a commercial venture. A student may submit responses to twenty-four questions which describe his preferences for college along with $5. He receives a computer-printed list of ten schools which most closely meet his specifications. Application dates and national tests which are required are included. The writer knows of one student who received output from SEARCH and compared it with the output available in his own guidance office where the Chronicle College View-Deck, Moravia, New York 13118, was available at no cost to him. The ten colleges obtained from both systems were identical.

SELECT College Consulting Program

The SELECT computer-assisted college selection system was recently purchased by Harcourt, Brace and World. A brochure which describes the service is available from Miss Bonny Kogos, Harcourt, Brace and World Test Department, 757 Third Avenue, New York, N.Y. 10017. The reader is referred to an article titled "Counseling by Computer" which appeared in the February 26, 1968 issue of The Chronicle of Higher Education. Pertinent information is given about Mr. David DeWan, founder of SEARCH and Mr. Bernard Klein, founder of SELECT, as well as information on several other related computerized commercial systems.

NEA SEARCH A Computer-Based Job Matching Service for Teachers, Counselors, and Administrators

The address is NEA SEARCH, 1201 16th Street, N.W., Washington, D.C. 20036. This is a computer-based job locator service sponsored by the National Education Association. Employers may list vacancies and educators may complete a questionnaire to indicate their desires for employment. Codes are available to indicate positions as counselor, vocational guidance counselor, college admissions counselor, and the states or metropolitan areas where one would like to be employed. The matching of openings to requests is done by a computer system.

Computerized Scholarship Search

This is another commercial service which claims to help students locate financial aid for college. Attractive promotional materials indicate that the fee is $15. The address is North American Educational Computer Services, Inc., Princeton, New Jersey 08540.

Instructional Management System

The Southwest Regional Laboratory for Educational Research and Development has contracted with the System Development Corporation to develop a computer-based information system designed to aid school personnel in the individual monitoring and management of student progress. Inputs to the system include results of diagnostic tests, other information about pupils, and instructional resource materials. Machine prepared outputs show individual and group performance on the diagnostic tests, and suggest alternative instructional materials for teaching techniques that the teacher might use for pupils with specific weaknesses. The Southwest Regional Laboratory is currently operating the system in two California elementary schools. Teachers receive prescriptive information to aid them in making instructional decisions about the pacing of the class, the reassignment of students to different ability groups, and the administration of supplementary remedial materials, etc. Information can be obtained by writing Dr. Richard E. Schultz, Director, Southwest Regional Laboratory for Educational Research and Development, 11300 LaCienega Boulevard, Inglewood, California 90304. Ask for the publication "Technology in Education", August, 1967. Information is also available from the System Development Corporation, 250 Colorado Avenue, Santa Monica, California 90406. Ask for the following publications: "An Instructional Management System for the Public Schools", by John E. Coulson, June, 1967, and "Design Objectives of the Instructional Management System," by Harry F. Silberman, February, 1968.

Computer-Assisted Instruction

It is very difficult to learn about all the computer-assisted instruction projects that are now under development. They are related to Guidance and Counseling very much because in order to operate they need a basic file of information about pupils and initially, placement decisions are made from this data. As students proceed with computer instruction, new data about their learning patterns and progress becomes available. Problems are noted quickly, and instruction can be modified to be as appropriate as possible for each individual. Following are a few sources of information about CAI.

1. "New Tools for Education", System Development Corporation, 2500 Colorado Avenue, Santa Monica, California 90406.
   Includes a description of several CAI projects.

2. "Planit, a Flexible Language Designed for Computer-Human Interaction", by Samuel L. Feingold, October, 1967, System Development Corporation.
   Several CAI systems are listed, as well as Planit, which permits teachers to construct and edit lessons in various formats and store them in designated sequences for later presentation to students.

3. COURSEWRITER, A CAI system marketed by IBM is one of the largest operating systems in existance.

4. PLATO is one of the originial CAI systems developed by Dr. Donald L. Bitzer and associates at the Coordinated Science Laboratory, University of Illinois, Urbana, Illinois.
The system operates on a Control Data Corporation computer and utilizes television displays of information from computer storage and slides.
If you wish to study CAI, start with this system.

5. RCA Instructional Systems, 530 University Avenue, Palo Alto, California 94301, has announced a complete system which includes computer instruction system equipment, curriculum materials, and programmed, operational systems. Their chief consultant is Dr. Patrick Suppes of Stanford University, who conducted several experimental and developmental CAI programs in East Palo Alto, California for about the last five years. Write to RCA for very complete materials which describe their system. We understand that Harcourt, Brace and World has developed some of the instructional materials and tests which are utilized.

6. Burroughs Corporation, Special Systems Group, Paoli, Pennsylvania 19301, reports that Denver University has developed a CAI program called TEACHER for use with one of their computer systems. Complete student records are maintained, course registration is provided, a mail box feature is included for communication between instructor and student. A version of the SDC Planit Program previously mentioned is being developed in COBOL for use on a Burroughs computer at Air Force Bases.

7. The New York City Board of Education, 110 Livingston Street, Brooklyn, New York 11201, announced in March, 1968 that it had initiated an operational computer system designed to teach large numbers of pupils simultaneously and individually. They are utilizing the RCA-CAI system previously listed.

8. Westinghouse Learning Corporation is cooperatively engaged with the American Institutes for Research and fourteen school districts in the development of a computer-managed system of instruction aimed at providing individualized instruction in four subject areas, initially from grades one through twelve. For complete information, write to Mr. Carsten Lien, Managing Director, Project PLAN, P. O. Box 1113, 1791 Arastradero Road, Palo Alto, California 94301. The Measurement Research Center (MRC) of Iowa City, Iowa is now a division of the Westinghouse Learning Corporation. Also, Dr. John C. Flanagan is Chairman of the Board of Directors of the American Institutes for Research. Those of us in the Guidance profession know Dr. Flanagan well for his work in the use of computers for the analysis of data in Project TALENT. Dr. Flanagan's research forms a basis for Project PLAN.

9. General Electric is part owner of the General Learning Corporation, 3 East 54th Street, New York, New York. They may also be contacted for information about their CAI activities.

10. Harvard University Computer-Aided Instruction Laboratory, Dr. Lawrence M. Stolurow, Director, 6 Appian Way, Cambridge, Massachusetts 02138, has a descriptive brochure available. Several projects and purposes are outlined and CAI programs available for use on the IBM S 360 Model 50 with utilization of IBM COURSEWRITER. Examples of interest in guidance are:

    Visual Perception Confusion; a diagnostic test for reading problems.

    Diagnostic Reading Tests to establish reading levels 5 to 9, for use with adult illiterates.

    California Reading Test, upper primary and elementary levels.

    Several technical reports are available. Write for a price list.

11. Dr. Carl Hendershot, 4114 Ridgewood Drive, Bay City, Michigan 48707, has published a very complete list of programmed learning materials, Programmed Learning: A Bibliography of Programs and Presentation Devices, $11.50. Sections are included for all subject areas such as: Occupations, Personnel Practices and Supervision, and Study Skills.

12. ENTELEK, 42 Pleasant St., Newburyport, Massachusetts 01950, has issued the third edition of Computer-Assisted Instruction: A Survey of the Literature, $8. They also publish a guide listing 300 computer-assisted programs currently in operation.

Other References:

1. Dr. Angelo V. Boy, Associate Professor of Education, University of New Hampshire, Durham, New Hampshire 03824, reports "Students in Counselor education are exposed to computerized means of disseminating educational and vocational information, thus enabling the counselors to engage in more personal counseling."

2. Dr. Gail F. Farwell, Professor, Department of Counseling and Guidance, University of Wisconsin, Madison, Wisconsin 53706, reports that Randolf Thrush of the University of Wisconsin faculty has been doing some work in connection with a computer-based interview.

3. Interactive Learning Systems, Incorporated, 1616 Soldier's Field Road, Boston, Massachusetts 02135, claims to have several systems available for use in guidance. The costs involve a Teletypewriter which can be rented from the telephone company, the cost of telephone lines at the same rate as regular telephone calls, and a charge for the use of computer time. The computer is located in Boston. Counselor and student can work together on developing input and the counselor can work with the student on the interpretation of output. Systems which are available are as follows: Interactive College Suggesting System, Interactive Scholarship Finding System, Career Training Information System, and the Audio-Visual Career Simulation. Consultation is offered in several areas of school data processing.

Summary

An overview of computer information systems as they relate to guidance and counseling has been presented with an attempt to keep technical explanations to a minimum. The intent was to acquaint counselor educators and their charges with the existence of a tool for potential improvement and personalization of guidance work.

Virtually all of the computer information systems described are in early stages of development. One cannot yet obtain and implement such systems locally without additional effort and local modifications; however, the day is rapidly approaching when development will reach a level where availability on a broad basis will be a reality.

Now is the time for all educators to learn about this technology and join in development which will preserve a humanistic educational system with major consideration for the welfare of individuals.

An Analysis of Data Conversion Systems

by
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James W. Rollings, Ed.D., Associate Professor of Education and Director of Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kansas. Dr. Rollings has served as a public school teacher and counselor. More recently he served as consultant for the Colorado Department of Education, with responsibility for implementation and systems design of the Department's State test scoring and reporting service.

I. Overview

The purpose of this paper is to assist pupil or student personnel workers to understand some of the technical-practical aspects which relate to the selection of data conversion systems. It seemed appropriate to present this topic as a part of the implications of new technology for counselor education because, in those educational agencies using data conversion systems a student or pupil personnel worker is usually involved in the decision-making which relates to system selection or else he has some responsibility for implementation or production using such systems.

A data conversion system is to be understood as a means for converting data, e.g., letters, words, numbers, special characters, marks, etc., into machine sensible (readable) form. Typically, the "machine" for which the conversion is made is a computer. Also, typically, the data most usually prepared for computer use under the direction of the student personnel worker

are test data for students. Because this is true the specific focus of this paper will be to analyse those systems which are aimed primarily at converting student test responses into machine sensible form. This approach specifically excludes then, systems which are designed primarily to perform some other operation such as converting printed letters or numbers into machine sensible form.*

It should be recognized that systems designed primarily to convert student test responses into machine sensible form are not limited to "scoring" tests. In relation to the possible non-scoring uses for such systems, however, there has been relatively minor development in educational settings. Other categories of application for such "scoring systems" within the educational setting include: pupil cumulative data, inventories of school properties, professional personnel records, finances, and instructional programs.**

Regardless of the data conversions system, the essential first step is the same, namely, to "read" the marks on a document. One can perhaps best understand this if he thinks in terms of multiple "eyes" looking at the document. Recognize that the document may be the size of an IBM card, one side of a sheet, or even both sides of several sheets in one continous form.

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*A caution to be wary of regarding such systems: Frequently the vendors of such systems maintain that their system has the flexibility to "score" test data. While this may be true this does not answer the essential question. The essential question is, "Can their system select the darker of two marks in a defined field?" If the answer is "no" it is advisable to dismiss the system as inappropriate for test scoring purposes.

**Should the reader be seriously interested in the application of machine sensible conversion of such data he would be well advised to contact: Midwestern States Educational Information Project, C/o State of Iowa Department of Public Instruction, Des Moines, Iowa.

This "reading" occurs using light. The light is either reflected off of the document or literally passes through the document. The former is "reflected light", the latter is "transmitted light". However, in either case a pencil mark causes the light to change. If the document is read with either reflected light or transmitted light, the occurrence of a mark will "absorb" the light. The reader may have already accurately concluded that by using transmitted light both sides of the document is read simultaneously (with one pass). The essential initiating logic of the system then is to determine when reading a document, whether there is the expected light at a given time and at a given location.

This seemingly simple decision is compounded when one considers these additional circumstances:

A. The mark must occur in an area on the document such that the "eye" can see it. (The eye is cursed with tunnel vision.)

B. Since the mark is moving the "eye" must be looking at just the right time. (The "eye" goes to sleep after one glance.)

C. Since the recorder of marks must have the option to change his mind, the eye must work with other eyes to decide which is the darker of two marks if one of the marks is an intended erasure. (Aside from tunnel vision and sleeping most of the time the eye must function cooperatively with other eyes.)

D. Occasionally a mark may be recorded in such a location, given a test scoring application, that it is a "right" response. (Once again the eye must cooperate and send all responses, that is, marks read, to a central clearing house so that a decision is made whether one (1) should be added to a counter.)

E. Occasionally multiple responses to a given question may be appropriate. This occurs when scoring teacher-made tests and is mandatory for certain subtests for the DAT forms A or B. This condition has relevance to condition C (above).

F. If the test scoring is to include item analysis, then the mark must be sensed and converted in the central clearing house so that it becomes a commonly known number, letter, or special character. Further, this converted datum must be either stored for subsequent use or "put out" into magnetic tape, punched card, or paper tape.

G. It is common practice to have pre-determined marks refer to data about students. For example, a series of marks may "spell" the students name, equate to his birth date, sex, age, class or school. Again, these marks, either singularly or in combination, are sent to the central clearing house for conversion and storage or conversion and out put in tape or punched card.

H. Certain conversion systems have the capability to determine the absence of marks necessary to fulfill the demands made under condition G. This is referred to as "controlling" for missing data.

There are questions one should ask about the system relating to conditions A-H.

A. Where can documents be obtained that assure printing registration. That is, assure one that the marks made by the respondant can be seen by the reading eye?

Suggestion: Buy through the vendor of the system so that they take responsibility to see that necessary and very critical printing standards are met.

B. What happens if the document moves too fast or too slow?

Suggestion: There are three reasonable alternatives, (a) stop the document, (b) keep the document moving but signal an error, (c) keep the document moving, signal an error and select the document for special handling. The theoretical and actual throughput speed of the system are related to condition B and to this question. The latter alternative is the most desirable because it maximizes scoring speed regardless of the theoretical speed of document reading.

C. Vendors make claims that their system is highly sensitive and will perform in an outstanding manner in terms of differentiating intended marks from erasures. How can one tell which system does the best job?

Suggestion: Probably the best way to arrive at an answer is by on-site inspection of some production from the system. Keep in mind that this differentiation varies from day-to-day and from job-to-job.

D. Can I score tests with more than five possible responses? How many different subtests can I score on a sheet side? How many different response formats can I use on a sheet side? Can I mix formula scoring of several types with rights only scoring on a sheet side?

Suggestion: The capability will vary considerably depending upon the system. You should know your immediate needs and project future needs of this type. Probably the best answer is to have the most possible flexibility.

E. If the system has the capability to score multiple rights to a given question what happens when a poor erasure is read? Suggestion: If the system has the capability to score multiple rights you automatically lose the ability to differentiate poor marks and poor erasures. Perhaps the better question is, will this be delimited to just one subtest if there are several subtests on a sheet side, only one of which must be scored for multiple rights?

F. Will I be able to score tests and create item analysis data simultaneously? Are the characters created by the system as output when developing item analysis data easily managed by the computer and/or the programmer? Will the speed of document scanning be slowed down when creating item analysis data? Suggestion: The answers to these questions will vary considerably from system-to-system. Be sure to consider the relative volume of item analysis before concluding that this is an important consideration.

G. It would seem desirable in my school district to routinely gather all the individual data mentioned in G (above) and, in addition, collect his social security number for cross reference with grades in school subjects. What are the limitations as to the amount of student identification data I can collect? Suggestion: This varies from system-to-system. You should also consider what kind of characters are produced by the system. For example, if a student "codes" a P as the first letter in his last name, is a P actually created by the system? You should also determine the degree to which characters are scrambled, e.g., is his name mixed with birthdate and sex. Both of these latter two questions, if not carefully considered, can increase markedly the

difficulty of using the data when processed through the computer. These questions increase in magnitude of import as the system is used for non-testing applications.

H. We have found that it is mandatory to have birth date or age to process intelligence tests beyond the scoring phase, will this system tell us who doesn't have birth date coded correctly?

Suggestion: Some systems can "control" for missing data. This means simply that it will tell you when data are missing. If erroneous data are coded, e.g., test date for birth date, this cannot be differentiated from the students actual birthdate. The capability to control for data on unlimited fields is, nevertheless, a very important system characteristic. The alternatives when missing data are detected are as described in B (above). Document reading would be dramatically and negatively effected if alternative C (above) were not a standard operating procedure.

Other considerations which relate to system selection include:

I. 1. Who will provide training of local personnel?

2. Who will provide engineering service for the system?

Suggestion: The answer to these questions have quite likely contributed to IBM selling or leasing a great many of their 1230 systems. The point being that they have "local" service available nationwide. One would, however, be well advised to investigate this in detail with current vendor customers before automatically concluding that their service is good or bad.

J. Must the system be interfaced with the computer?

Suggestion: Interfaced means operate in direct conjunction with the computer. The advantages of computer interface include:

a. Greater potential for control of data including checking for erroneous information at the scoring phase.

b. Usually the initial phase, i.e., scoring will be faster.

c. Potentially the scoring, processing and listing could be accomplished without stopping.

The disadvantages include:

a. Technical assistance (programming) is needed to initiate any production.

b. Cost for scoring must include computer costs which are, hour-for-hour, much higher than cost of scoring machine alone.

c. Possible production conflicts with other computer-based applications.

d. If one intends to inter-face machines from two different vendors, cooperative-technical conflicts exist. Similarly, if production problems develop responsibility is difficult to assess.

K. What kind of system output do you need in your local environment? Suggestion: If the system is interfaced with the computer this question is irrelevant because output will be determined by the programmer. If the system stands independent of the computer, you may find options including: punched cards, magnetic tape, or paper tape. Here too, the programmer should guide you in your selection. Be careful, however, because, for example, if magnetic tape is selected, there are variations in numbers of channels and density of characters per inch. Also, note and discuss with the programmer the read-write characteristics of the tape drive.

L. Will the system routinely print scores by sub-test on the document?

Suggestion: It is important that this be a routinely available characteristic. More specifically, however, for purposes of visual checking this characteristic should be under the control of the operator and be flexible so that more than one printing location is possible. Often a sheet may need to be run through the system several times before it is satisfactorily read.

M. How close to theoretical document reading speed will the system run?

Suggestion: Assuming that (a) you have a conscientious operator, (b) that the system doesn't stop on minor error conditions, and (c) you are not reading student identification information you should run at 90% maximum. If a and b are met but not c, your production will run at about 75%. If either a or b are not met, production could easily reduce to 40% or less of theoretical maximum.

II. Specific Systems

In this section specific systems are identifed and briefly described. Two of the systems are interfaced with a computer, the other two are not interfaced.

MRC 1501 Optical Card Scanner

MRC or Measurement Research Center is located in Iowa City, Iowa. Their specific address is P. O. Box 30, Iowa City, Iowa 52240. Telephone: 319 351-4300.

MRC could be considered the "mecca" of optical scanning know-how. It was established in 1953, subsequently it has been under the leadership of E. L. Lindquist. Last summer MRC was made a Division of Westinghouse Learning Corporation. The implications of this change are difficult to

asses. It is this writer's guess that MRC processes more data than all the other optical scanning installations, public and private, combined. Moreover, MRC has craftsman to develop documents, hardware, computer interface and software which relate to their needs and, presumably, the needs of their customers.

It should be noted that the 1501 is a card scanner. This implies that students would be responding to test questions on cards. This is not a new innovation and has, in fact, been operational for at least 10 years. The 1501 is interfaced with a computer. MRC considers standard interface to include IBM 360 series (mod. 30 and up) and the Honeywell 200 series. Interface with other computers is entirely possible but would be more expensive. The basic 1501 leases for $1880 monthly or can be purchased outright for $94,000. Quoted delivery time is six months.

It should be noted that the 1501 has the capability to routinely scan punched cards as well as imprinted (like a credit card), preprinted and pencil marked cards. The theoretical rated maximum scanning speed is 1500 cards per minute. As their scanner reads both sides of the cards simultaneously, either with transmitted light or two reflected-light reading heads, the per hour input speed for other than punched cards is 180,000 card sides. This is roughly equivalent to a like number of 805 sheets, i.e., each card side can contain about as many response positions as could one 805 answer sheet.

NCS OMR 42-11 Scanner

NCS or National Computer Systems is located in Minneapolis, Minnesota. Their specific address is 1015 South 6th Street, Minneapolis, Minnesota 55415. Telephone: 612 335-3267.

NCS is a fairly new company having been founded in the early 1960's. They have, however, grown dramatically in the last two or three years both in terms of services and products available.

The 42-11 scanner reads using transmitted light. The document size which their scanner can accomodate ranges from 8 1/2" X 11" sheets to fan-folded 11" X 42" booklets. NCS leases their 42-11 scanner at $1250 per month, or sells this scanner at $49,500. Apparently they are ready and able to interface this scanner with a wide range of general-purpose computers. The processing speed will vary according to the computer with which the 42-11 is interfaced. In addition, speed will vary depending upon document size. It appears that about the equivalent of ten 805 answer sheets could be included on one 11" X 42" document. Outside maximum appears to be about 6000 such documents per hour or the equivalent of 60,000 sheet sides. It should be noted that response positions on their documents are larger than would be found on cards, hence, their documents could be used with younger students.

The 42-11 was first announced for delivery in 1966 with a quoted availability date 4 months subsequent to final leasing or purchase arrangements. One apparent unique aspect of the NCS service is that if one did not want to interface their 42-11 scanner into an already existant computer they will provide a small one with their scanner. The cost for this is, of course, higher than the cost stated above.

Digitek 100

The Digitek 100 is produced by the Optical Scanning Corporation, Newtown, Pennsylvania 18940. Telephone: 215 968-4611.

Optical Scanning Corporation, until about two years ago called the Digitek Corporation, was established in the early 1960's. Their product has been from the outset, designed to operate independent of the computer and to read pencil marks on 8 1/2" X 11" sheets. Their product was slow to gain the attention and respect it justly deserved. Subsequently, it has gained respectability and, as of about two years ago, there were in excess of 100 Digiteks installed nationwide.

There are several options one may select as output devices including punched cards, magnetic tape or paper tape. The device reads with reflected light and will read at about 2500 sheets per hour (one side only). One sheet side can contain the equivalent of about 3 sheets of 805 data, hence, the equivalent of 7500 sheets per hour. The Digitek is, in fact, unique in that it can score 805 answer sheets. Under this circumstance, of course, it would only be scoring at a maximum of 2500 sheets per hour.

The leasing or purchase price of the Digitek varies slightly according to the output device (tapes or card), however, the prices are roughly $800, and $40,000 respectively. If one were satisfied with a scanner which produced scores only on the answer sheet, that is, did not convert data into machine sensible form, one model of the Digitek can be leased monthly for $327, or purchased for about $18,000.

IBM 1230

The 1230 is a product of the International Business Machines Corporation. IBM can, of course, be contacted in nearly any medium-size or large metropolitan community.

The 1230 was announced in the early 1960's and is a modification of their little known 9902. The 9902 was preceded by the 805 which

was the first test scoring gear offered commercially. The 805 used principles of reading pencil marks which are quite different from those described earlier in this paper.

It is difficult to discuss the 1230 because of the variations which exist. For example, there are really three 1230's, i.e., 1230, 1231, and 1232. The 1230 is the most commonly used gear in educational environments. Specifically, it is the 1230 scanner with a 534 card punch attached to produce machine sensible and scored output. The combined system, i.e., 1230 and 534 leases for $376 monthly (when a 20% educational discount is taken). One could, of course, lease just the 1230 if local requirements did not include the need for data to be converted to machine sensible form. Under this circumstance the monthly lease cost, taking an educational discount, would be $320.

The 1230 operates independent of the computer and reads 8 1/2" X 11" sheets using reflected light. The reading speed is 1200 sheets per hour. Since the 1230 sheet can handle about the same data as an 805 sheet, the reading speed theoretical maximum is 1200 sheets per hour.

The 1231 and 1232 are not designed to score tests. Rather their primary function is to convert marks to machine sensible form. Both read at about 2000 sheets per hour using reflected light. The essential difference between the 1231 and 1232 is that the 1231 is interfaced with the computer while the 1232 produces data in punched cards and is not interfaced with the computer.

Other Possible Approaches

Certain local circumstances may predicate the advisability of manual generation into machine sensible form, data which would otherwise be

converted by one of the aforementioned scanners. Such an approach might include use of hand scoring, IBM 805 or either the IBM 1230 or Digitek 100 without automated output. The typical, and perhaps even the most logical, way in which data is manually converted into machine sensible form is with the use of the key punch. Using this means one would need to consider the relative efficiency and cost of keypunching. It is always advisable to verify key punched data, therefore, creation of data using the key punch should be followed by machine verification. Roughly, this will cost about $2.50 per hour for key punching and $2.50 hourly for verifying. Experience has disclosed that key punching occurs at about 3500 key strokes per hour, while verifying can be accomplished at about 4000 key strokes per hour. If one calculates the number of characters, i.e., letters and numbers to be turned into machine sensible form he can, using the aforementioned parameters, arrive at relative costs.

Another approach worthy of consideration would be the use of the IBM MTST typewriting system. Because this writer lacks experience using this system the details cannot be spelled out here, however, it is a technically feasible approach and would offer some advantages over the use of the key punch and verifier. Two of those advantages are: (1) typewriting skills are immediately available in nearly any environment, (2) computer input speed would be faster than cards by a magnitude of at least ten to one.

III. Summary

It was the intent of this paper to set forth criteria or questions to be considered when selecting a system to be used for converting data

represented by pencil marks into machine sensible form. The job of making this selection is difficult and complex because it pre-supposes knowledges and understandings which most pupil or student personnel workers do not possess.

Several systems were presented as alternatives to be considered. The reader should understand that the alternatives presented does not exhaust the ones which are available. Moreover, the demand for such systems is great and private enterprise is responding with new techniques, options, and technology at a pace which is amazing. The point being that regardless of what is said today it may be indicative of the ill-informed tomorrow.

THE USE OF VIDEO TAPE RECORDINGS (VTR) IN COUNSELOR EDUCATION

By Donald V. Forrest

I. Introduction

As a result of responses to personal letters sent by Dr. Robert Sawyer, University of Missouri, and a published request in the "Guidepost" asking for information on new technology in Counselor Education, it appears that Video Tape Recording (VTR) equipment is being used extensively for playback (Feedback) in counseling practicum, group procedures practicum, as well as for lectures and class presentations in pre and post practicum activities. Many of these innovative and interesting applications of VTR are briefly summarized here. In addition, a brief description of VTR equipment is presented along with selected references.

II. Research and Projects

Colorado

Colorado State University, Fort Collins

"Micro-counseling", using video taped five minute counseling sessions as well as cue discrimination, modeling techniques, and supervisor reinforcement were used in a prepracticum program to determine the feasibility of teaching basic counseling skills in a short block of time. Three skills, attending behavior, (listening both verbally and non-verbally) reflection of feeling, and summarization of feeling, were the focus of the research.

Findings indicated that it was feasible to teach basic skills of counseling in a two hour block of time by use of this five minute micro-course technique: counselors in training also found the experience vital and meaningful to them.

For further information:

Allen Ivey
University of Massachusetts
Amherst, Massachusetts 01002

or

C. Dean Miller, Weston Morrill,
Cheryl Normington
Colorado State University
Department of Education
Fort Collins, Colorado 80521

Also to be reported in The Journal of Counseling Psychology.

Donald V. Forrest, Ed.D., Associate Professor, Department of Guidance and Counselor Education, College of Education, University of Wyoming, Laramie, Wyoming.

Illinois

University of Illinois, Urbana (1968)

A project is underway to develop a video-tape library on various aspects of counseling. Over 80 critical incidents in counseling have been recorded thus far using professional actors as counselees. The results of the project study are being studied and preparations are underway to publish findings and conclusions.

For further information:

Daniel Delaney
University of Illinois
Department of Educational Psychology
Urbana, 61803

Michigan

Michigan State University, East Lansing, Michigan (1963)

Interpersonal Process Recall (IPR), a technique in simulated recall methodology, was developed utilizing video taped counseling sessions. The counselor and the counselee viewed the playback in separate rooms. To obtain parallel reactions the tape was interrupted at significant points and both participants were asked to recall their feelings at that moment. Although the thrust of the research was toward utilization of the technique in therapy, the researchers suggested its usefulness in counselor education.

For further information:

Norman Kagan, David Krathwohl, and Ralph Miller
Michigan State University
East Lansing, Michigan 48823

Also reported in: Journal of Counseling Psychology 10:237-43, Fall 1963

University of Michigan, Ann Arbor, Michigan (1963)

Researchers investigated changes in self perception by counselor trainees after viewing their interviews on video tape. Findings indicated that after this experience trainees became less positive in their self description, but gained greater confidence in their interviews, became more aware of personal qualities, and increased their desire for self study.

For further information:

Gary Walz or Joseph Johnston
Counseling and Personnel Information Center (CAPS)
University of Michigan
611 Church Street
Ann Arbor, Michigan 48104

Also reported in Journal of Counseling Psychology 10:232-36, Fall, 1963

New York

Hunter College of the City University of New York (1965)

Video tape recordings were used to analyze the empathic process in counseling. Interviews were video taped and themes and situations reflecting the researchers' empathy model were extracted.

Findings indicated that empathy involved a number of psychological processes, that empathic persons were rare, and that, generally speaking, schools did not represent an empathic milieu.

For further information:

Arnold Buchheimer, Jesse Goodman, Gerald Sircus
Hunter College of the City University of New York
New York, New York 10036

Also reported in: Technical Report to The U.S. Office of Education
"Videotapes and Kinescopic Recordings as situational Test and Laboratory Exercises in Empathy for the Training of Counselors"
NDEA Title VII Research Project #7-42-0550-1670

Marist College, Poughkeepsie (1968)

As of December 1968, a study was being conducted to evaluate the effects of "Immediate and Delayed Playback of Group Counseling of Self-ideal Congruence of Individuals." Comparisons with other forms of group counseling were to be made.

For further information:

David Miller, Director
Testing and Counseling Center
Marist College
Poughkeepsie, New York

South Dakota

University of South Dakota, Vermillion (1966)

A counseling cubicle with a one-way vision screen, a simulated counseling cubicle with only partially concealed cameras, and an open TV studio with no attempt to conceal cameras were evaluated as settings for video taping counseling interviews for use in critique sessions.

Findings indicated that there were no significant differences between any of the three settings as rated by both the counselor trainees and the counselees. However, more positive reactions seemed to result from the open studio setting using a pre-focused, unmanned camera.

For further information:

E. Gordon Poling
Department of Educational Psychology and Guidance
School of Education
University of South Dakota
Vermillion, South Dakota 57069

Also reported in: Journal of Counselor Education and Supervision 7:348-56, Summer 1968 and 8:33-38, Fall 1968

Texas

Texas A&M University, College Station (1968)

As of November 1968 the Counseling and Guidance program here was working under a grant to "explore audio and video tape technology in counselor preparation." Specifically, a dual TV system was being developed which would allow routine replication of Interpersonal Process Recall of the type described by Kagan and his associates at Michigan State University. (See summary under Michigan this paper)

For further information:

Arthur J. Roach
Department of Education
College of Liberal Arts
Texas A&M University
College Station, Texas 77843

Wisconsin

Wisconsin State University, Platteville (1968)

Video tape recorders are being used to prepare demonstration tapes and for routine playback for self evaluation. VTR and signals are used to record a "permanent counseling attitude report." By the use of foot controls the counselor trainee can record a light on the video tape when he feels he is in tune with the client's problem; the client can do the same when he feels he is being understood. This procedure is used to analyze feeling content and to teach the meaning and importance of non-verbal behavior.

For further information:

Wilhelm Mayer
Educational Psychology Department
Wisconsin State University
Platteville, Wisconsin 53818

III. Routine Playback

The following programs report some individually unique applications of the use of VTR but generally regard VTR as part of regular program and use it somewhat routinely in playback situations not unlike use of audio taped materials:

1. University of Arkansas, Dr. Glenn A. Cole, College of Education, Fayettville, Arkansas

2. University of Delaware, Dr. Victor Mankin, College of Education, Newark, Delaware 19711

3. University of Colorado, Dr. Bill Sease, Boulder, Colorado 80302

4. DePaul University, Dr. Don Dinkmeyer, 25 E. Jackson Blvd., Chicago, Illinois 60608

5. University of Illinois, Dr. Daniel Delaney, Education Building, Urbana, Illinois

6. Purdue University, Dr. Bruce Shertzer, School of Hum., Soc., Sci., and Education, Lafayette, Indiana 47907

7. University of Minnesota, Dr. Lyle D. Schmidt, College of Education, Minneapolis, Minnesota 55455

8. Eastern Montana College, Dr. C. Rockne Copple, Billings, Mont. 59101

9. Wright State University, Dr. Wesley Huckins, Col. Glenn Highway, Dayton, Ohio 45431

10. North Texas State University, Dr. Edward C. Bonk, Denton, Texas

11. University of Utah, Dr. Phelon Malouf, 310 Milton Bennion Hall, Salt Lake City, Utah 84112

12. University of South Dakota, Dr. E. Gordon Poling, School of Education, Vermillion, South Dakota 57064

13. University of Wyoming, Dr. William Moorhouse, College of Education, Laramie, Wyoming 82070

IV. Equipment

A. Description

Acquisition and use of VTR equipment could prove to become an involved and complex process. Consultation with A-V personnel and television staff in your area is highly recommended. Most of the major companies (Sony, Concord, Ampex, G.E., etc.) will provide free consultation and demonstrations

which will prove most helpful in making appropriate selection and use of equipment. Equipment in a complete VTR unit will consist of:

1. Video Camera wt. 5-50 lbs./ (with appropriate lenses and tripod) with focal and lighting adjustments and lead-in wires to the recorder unit. Use of zoom, wide angle, or telescopic lenses, split screening, need for battery operated portable units, and fixed versus mobile cameras suggests adaptations which are available at higher costs.

2. Video Recorder wt. 50-100 lbs./ The heart of the unit, the recorder is similar in many respects to the standard audio-tape recorders which are widely used, in that they provide for easy threading, stopping, starting, recording, rewinding, and playback. Dials and meters provide monitoring of picture and sound levels during recording and playback. Some recorders adjust levels automatically, which is necessary if operator is not available.

3. TV Monitor wt. 3-40 lbs./A monitor has the appearance of a regular TV set but lacks a tuner and thus picks up only the signal from the unit-cameras or recorder. Sizes vary from 8-inch TV screen size to large 21-27-inch screens, with weight varying accordingly. Some units (Monitor/Receiver) may serve to both monitor camera pictures and serve as standard TV receivers. Stationary vs. mobile units requirements suggest special considerations in size and weight.

4. Microphone wt. 1-3 lbs./To insure adequate audio to accompany the video picture a good quality microphone with appropriate cable length is very important. A variety of choices are available for various purposes, such as: high impedence vs. low impedence, omni-directional vs. undirectional, etc.

5. Video Tape wt. 1-10 lbs. per roll/Tapes vary in size, weight, and cost, depending upon brand and unit acquired. Half inch, one inch, and two inch tapes are the three standard sizes. The ½ and 1 inch tapes are widely used by Counselor Education programs with two inch being of broadcast quality most preferred by TV professionals. Cost of tapes vary by brand and size, with ½ inch-1 hr. tapes costing about $25-40 and 1 inch-1 hr. tapes costing about $55-60.

B. Costs:

A basic complete VTR unit (one recorder, one camera, one lens, one tripod, one microphone, one monitor and appropriate electrical cords) will cost approximately as follows: (Fall 1968 prices)

Brand	Recorder Unit	Tape size	Total Unit Price
General Electric	6EA8056	½ inch	$1,695.00
Sony	TCV210	½ inch	$1,340.00
Concord	VTR900	½ inch	$1,550.00
Ampex	A-5100	1 inch	$2,195.00

These prices represent a very minimum unit and demand for improved quality and greater versatility in use of equipment will increase cost considerably.

For further information on equipment:

Ampex Corporation, Consumer and Educational Products Division
2201 Lund Avenue
Elk Grove, Illinois 6007

Concord Electronics Corporation
1935 Arma Cast Avenue
Los Angeles, California 90025

General Electric
Closed Circuit TV Section
Visual Comm. Prod. Dept.
Electronics Park
Syracuse, New York 13088

Sony Corporation of America
47-47 Van Dam Street
Long Island City, New York 11101

V. Reference materials available on education of counselors by use of video-tape:

A. Books and Journals

Ward, R:, Educating Counselors by Video-tape using the Interpersonal process Recall Technique. Unpublished Doctoral Dissertation, Michigan State University, 1965.

Evans, Luther H. and George E. Arnstein, Automation and the Challenge to Education, Washington, D.C., NEA, September, 1962.

Arnstein, George E., "Who Will Counsel the Counselors?" Audiovisual Instruction, 8:22-23, January, 1963.

Griffin, G.G., "Audio-Visual Counseling Scale," Personnel and Guidance Journal 46:690-3, March, 1968.

Kagan, Norman, David R. Krathwohl and Ralph Miller, "Stimulated Recall in Therapy Using Video-Tape: A Case Study," Journal of Counseling Psychology, 11:194-5, Fall, 1963.

Landsman, Ted, and David Lane, "AV Media, Yes; Depersonalization, No." Audio-Visual Instruction, 8:24-28, 1963.

Thoresen, C.E., "Video in the College Classroom and Exploration Study," Personnel and Guidance Journal, 45:144-9, October, 1966.

Walz, G.R. and J. A. Johnston, "Counselors Look at Themselves on Video-Tape," Journal of Counseling Psychology, 10:235-6, Fall, 1963.

B. Government Publications/these may be ordered from:

ERIC Document Reproduction Service
Bell and Howell Company
1700 Shaw Avenue
Cleveland, Ohio 44112

Ed. 003.236 "Video-tapes and Kinescopic Recordings as Situational Test and Laboratory Exercises in Empathy for the Training of Counselors." Buchheimer, Arnold, and others, City University of New York, Hunter College, 123 pages, Microfische.18 hard copy $4.92

Ed. 003.219 "Video-Tape Recording in Counseling Practicum," Poling E. Gordon and others
South Dakota University
Microfische.16 hard copy $3.32

Ed. 003.230 "Interpersonal Process Recall, Stimulated Recall by Video-tape in Exploratory Studies of Counseling and Teacher Learning."
Kagan and others
Michigan State University, East Lansing 460 pages
Microfische.63 hard copy $18.40

Ed. 012.067 "An Experimental Study of the Effects of Tape Listening on Certain Modes of Functioning in Student Counselors."

Ed. 010.719 "A Pilot Study of Video-tape and Instant Replay to Accelerate Counseling Therapy".

Ed. 013.008 "Catalog of Audio-Visual Aids for Counselor Training in Mental Retardation and Emotional Disability."
Deveraux Foundation, Denon, Pa. 1967 110 pages
Microfische.50 hard copy $4.48

C. CAPS

The Counseling and Personnel Services Information Center, University of Michigan, 611 Church Street, Ann Arbor, Michigan is in the process of completing a search on "Counselor Education Programs and Television" and when completed will appear in a 1969 issue of their Current Resource Series. For information write to the above address.

IMPLICATIONS OF NEW TECHNOLOGY FOR VOCATIONAL ASPECTS OF COUNSELOR EDUCATION

by Dr. Henry Brito

The information collected for this report comes from a variety of sources, but a great deal of it has come from the cooperation of Dr. Arthur Kroll, Clark University; Edwin A. Whitfield and George Glasser, San Deigo County and Dr. John Krumboltz, Stanford University. The author wishes to publicly thank them for their assistance.

Improved technology has created dramatic alternatives in the approaches available for dissemination of occupational information. Collection evaluation, and dissemination of occupational information has long been one of the most poorly organized and chaotic aspects of the school counselors daily work.

Although career information in a variety of media is becoming increasingly more available its use within guidance programs tends to be erratic and inconsistent. The basic reason for the problem is the difficulty of effectively organizing what is essentially an amorphous, uncoordinated mass of facts and data regarding occupational opportunities. The veritable inunction of the counselor, by new material has created problems for both counselors and counselor educators.

No comprehensive indexing, abstracting, or dissemination resource currently exists. No organization or agency has assumed or been granted the responsibility for serving as a clearing house for occupational information. The E.R.I.C. system, founded by the U.S. Office of Education, has not specifically included an Occupational Information Resource Unit among its various centers.

An example of the Technological advances in vocational information is project V.I.E.W., in San Diego County, California. The Regional Center was established as a pilot project founded in part by the Vocational Education Act of 1963 in

February of 1968. The pilot program was divided into two phases. Phase one included the collection and synthesis of occupational information based upon student and counselor perceptions of which occupational information was of most worth and the preparation of data for about 55 occupations in the area of hospital occupations.

Phase two of this project centered on the experimental use of materials produced or microfilm aperture cards which were placed in the schools for use by students seeking occupational information. The material was then carefully evaluated.

Objectives of the developmental phase of the project were the following:

First to prepare, disseminate, and update occupational information on jobs requiring less than a baccalaureate degree for which local training was available in San Diego County. Second, to conduct inservice meetings with counselors and teachers on the professional utilization of these occupational materials. Third, to sponsor a summer career guidance workshop for counselors providing them with pertinent experiences in local entry occupations to aid them in their work with students. Fourth, to record and disseminate the reactions of these counselors to this experience for the use of the other counselors and students within San Diego County. Fifth, to follow up selected graduates from training programs in the six local junior colleges to obtain their reactions to the instruction received and their analysis of their current positions. An additional function of the Career Information Center was to prepare a filmstrip depicting the activities of the Center. This filmstrip could then be used to orient students, counselors, and other school personnel to the services offered by the Career Information Center.

During the developmental phase, career information was produced for all occupations requiring less than a baccalaureate degree for which training was available in San Diego County. This resulted in approximately 200 eight-page job descriptions. This information was disseminated to twelve participating schools and an evaluation of the materials and dissemination procedures were secured from the students, counselors, and school administrators.

The dissemination vehicle used was a system based on the use of the microfilm aperture card. A two-card format was chosen for each occupation with the first card containing four pages of general information and a second card containing four pages of local information. Each of the twelve participating schools in the project was supplied with a microfilm reader and a reader-printer which enabled the students to project the microfilm copy on a screen and. if desired, print out hard copy for subsequent discussions with their counselors or parents. In additions, parameters pertinent to the occupation such as aptitudes, length of training, restrictions, etc., were key-punched into each aperture card.

The main body of information for each occupation was prepared in a standardized format suitable for conversion into microfilm form. Each brief in its unconverted form consisted of four 8½ by 11 inch pages. A standardized heading was also chosen, the acronym VIEW (Vocational Information for Education and Work); and the briefs were referred to as VIEWscripts. Each of the pair of briefs for an occupation was put on microfilm which is mounted in an aperture card by use of a processor-camera.

The results of this study indicated that the microfilm aperture card approach to disseminating occupational information was favored by both the students and the staffs of secondary schools. It is also apparent from the reaction of those having only printed copies of the VIEWscripts that the short, concise format used for VIEW and the provision of local information was well accepted by students, counselors, and teachers.

The high ratings given by the students regardless of group does not, however decrease the value in the microfilm approach. Students having only printed copies of the VIEWscripts, it must be remembered, were comparing these materials with other printed materials they had experienced in the past and not with the microfilmed VIEW materials. A more direct comparison of the two methods of disseminating information might result in a clearer difference in favor of the microfilm approach. This hypthesis is partially supported by the number using the VIEW microfilm aperture cards in the present study. Less than 50 percent of the total Student Reaction Questionnaires from Group One were used in Table 1 due to the large number of students who indicated they had not used occupational information previously and consequently were unable to make a comparison concerning VIEW. The VIEW system evidently motivates students to use occupational information.

Even with the favorable reaction of the students in this study to the VIEW method of dissemination it is also evident that students were not severely critical of the occupational information they had used in the past. The relatively high rating given by these students to the occupational information previously used does not coincide with the numerous criticisms of typical occupational files in the schools. However, even a cursory inspection of occupational information materials commonly contained in school files will quickly dispel any doubt of the validity of such criticisms. The responses of these students concerning this information they had previously used then give added support to the need for current, accurate, usable occupational information in the schools. Apparently students take little notice (unless specifically asked to do so) of such things as revision dates, accuracy and objectivity in occupational materials. Information is accepted at face value and good information as well as misinformation is incorporated on an equal basis in the students' decision-

making processes. Only by insuring the availability of accurate, up to date, complete, and objective information can we be sure that the factual foundations for career decisions are sound.

The studies and projects reviewed are not the only innovative programs in existance. They were used only to demonstrate their extensive implications.

The greatest problem presented for the Vocational Aspect of Counselor Education is not the adequacy of materials, or their utility. The greatest problem is what to include in the basic occupational information courses. It seems apparent that some changes in course structure are inevitable. However, more important than the course changes is the philosophical position and the preparation of counselors. Do we prepare technicians able to handle the modern technology or do we concentrate on individuals with a more generalized background. Answers to the problem are not readily available, and certainly additional study is needed.

IMPLICATIONS OF NEW TECHNOLOGY FOR COUNSELOR INTROSPECTION

by

Ethel C. Anderson, Ed.D.
Arizona State University

Change and growth are equally essential components of counselor education programs. Without these vital forces, the encapsulating elements of stagnation and rumination would slowly but surely strangle an otherwise dynamic and progressive field.

We have, in this ACES report, attempted to recognize some of the changes--with the emphasis being those changes we categorize as changes in technology.

Dr. Rollings report of "Data Conversion Systems in Measurement and Evaluation" and Dr. Moorhouses's report on "Computer Information Systems--a New Tool in Guidance" will undoubtedly meet with some "tuned out" ears. Let's look at some reasons which may be behind this "tuning out".

First, it is often felt that this media is more for education, information, research and evaluation and does not enter into counseling per se. Does this say that counseling isn't learning---that counseling isn't education? What about this "whole person" we speak of that is so important to the philosophy of counseling?

Secondly, the idea that some counselors spend up to fifty per cent of their time dealing with data processing is frightening. We react in one of two ways; avoidance of this media or treating the media as a vital reason to be more knowledgeable about computers and data processing because we would much rather have them working for us

than US working for them. The latter reaction brings to mind another question--are we really accepting this new media as a useful tool in counseling or are we indeed saying that we must defend against it in order that it will not control us? Take a moment and answer that question for yourself. It is important to know whether or not what you verbalize is what you are actually doing! Having answered that question go one step further and ask yourself--does either reaction help you to be a more effective and functional counselor?

In my opinion, it seems important to learn to utilize this media of communication, perhaps not to operate all of it but to be able to utilize its functions well enough that it can indeed work for you effectively. Indications are that this is an area where teachers, administrators and counselors could work closely together, sharing information which the computer can give them. Instead, we remove ourselves from this area or ignore it and then run around seeking ways in which we can work together more closely with teachers and administrators.

Dr. Brito's report identified some of the retrieval methods being used to present occupational information. This is another area which counselors often label "dissemenation of information" and therefore maintain that it is interesting, necessary and valuable but really it is not counseling per se. Does this attitude really say we want to give this responsibility to someone else so we will not be forced to grow and change with the world of work. Are we willing to become knowledgeable in this field, or do we remain content making referrals to the library or a file. To give students the responsibility to go and look material up is great and important, but I ask you---are

you one of the many, many counselors who sold your school on purchasing some of this equipment (expensive) for this purpose and then you remain content not knowing how to use it yourself and therefore not training anyone else in its use? Are we willing to give the students the freedom and the responsibility of using occupational and vocational material that we select for them. A more definitive word for counselor introspection in this instance is trust. Do you trust the students. You will receive from them exactly what you expect and what you give. It was my privilege to visit one high school for the sole purpose of seeing and evaluating their wonderful vocational and occupational library and materials. It was indeed beautiful--after the librarian had removed the padlock (this was in the midst of a library full of students, at the time) and the files, the film strips, the cross references system, etc., were proudly displayed. There were curious, fascinated eyes trying to see what I was being shown. When I inquired as to the procedure for student use I learned it was strictly a "baby sitting" approach--the students were rarely allowed to touch it, after all they may in some way deface this proud possession. For their use there was a small shelf where a few battered and out of date pamphlets or articles were available. Nothing is more frustrating for a counselor, than to find a locked file drawer or room because the secretary is out when he wants some information--why do we consider this to be a less frustrating situation for the students. So if you are purchasing materials for status, for impressions, for NDEA certification rather than for student use take a close look at yourself and examine your motivation--a very close look at your own feelings relative to trust of another human being. Also, whose needs are being met--if anyone's.

I recall when the Kimberley project (as reported by Dr. Brito) was in its beginning stages. We were selecting a school. The vocational and occupational room was well used. The files were apple boxes with folders and the students helped fill those folders--not as a project but as they found or read occupational and vocational knowledge they wanted to share with others. The tapes and records weren't used as much because equipment had to be checked out and equipment costs money--therefore "baby sit" it. If you are going to have equipment utilize it and make it work for you don't let it control you and only be useful at inventory time. Take a look at your behavior--do you have a "functional" vocational and occupational program based on trust, materials and a willingness for sharing knowledge as well as yourself.

Dr. Forrest has talked about video tapes and perhaps the message is "seeing is believing" but then add to that for yourself as a counselor and a supervisor "what are you going to do with that 'seeing' are you going to extend it to "what is really happening and allow the introspection to take place? Or will you settle for a nice safe word like "AWARENESS" and do nothing with that awareness.

We as counselors build our own nice set of defenses with words such as awareness, committment, action, becoming--what do those words mean--that we are content if we become aware of new things and that we can leave whatever we became aware of right where it is so long as it does not bother us. Does committment mean that we are committed to remain just the same as we were and we are committed not to extend ourselves beyond, not to grow or to learn, or to use what is happening in a constructive way. Does action mean taking every action within

our power to remain static within our own field and therefore we are no longer becoming but that we want to think we have become?????

Another area which I would consider to be a new technology, though to most it isn't new but it is certainly becoming and it is not taking a back seat to anything, is that area of group technology. I term it that way because groups go by many differnt names for many different purposes but have very basic aspects, such as understanding, sharing, and self understanding. The experience of getting to know another person. There are as many different experiences being tried as there are counselor education programs very often using groups as a base from which to work. The University of North Dakota presently is conducting several studies on the use of verbal interaction analysis. Innumerable colleges are providing intensive group experiences for all counselors in training in an effort to enable the counselor to know what kind of person he is, how he can be most effective, what his style for relating to people is, the impact he has on others, and ways in which they might improve their inter-personal style. At Arizona State University, we are attempting to measure the effect of systematic desensitization on the training of counselors, the use of lights for rewarding the correct responses, the use of tape recorders rather than a professional group leader. It would appear to me that we seem to be brainstorming what can be done with groups and then trying out some of those ideas that may be effective. The University of Missouri at St. Louis is emphasizing intensive group experiences and from the material that was shared with us group experience and behavioral modifications stand out most often and most prominently. Both of these medias are powerful tools. Probably more powerful than the tape recorders, the computers,

and the video tapes. Therefore, be knowledgeable about their constructive use. There is a definite need to broaden our field of experience in this area--not just to acknowledge new techniques of sensitivity or "opening up our feelings" but to extend that knowledge to a functional use. Too many counselors run groups just for the sake of being able to say they are running a group--the question I pose then is where are they running with the group--do they know what is really taking place. If you really take a look, you'll stop a moment and look at the group work you are presently involved in. Because people are talking or even shouting at one another doesn't mean anything is happening relative to the constructive use of a group. At least we know visually when a computer is working or not working, or when it becomes so frustrated with impossible things we feed into it that it blows up--but we are not always so cognizant of what people within a group are able to deal with and do we just keep feeding something in with no introspection as to what is happening with those people. From that aspect behavioral conditioning is safer and still we have been hesitant to learn more about this aspect or accept it because of its power. I am very involved in group work and perhaps that is one reason it is so very important to me to try and share with you my concern about the real need for a intensive counselor introspection with any form of new media or new technology which we have available for working with human beings. They are all powerfull--they can be misused more easily than they can be constructively used. It is to me extremely important that counselor educators have and incorporate into counselor educator programs, a functional knowledge as well as a theoretical knowledge. We can no longer say human relationships are most important therefore that is all we will work with. We know human relationships are important--that is counseling.

But new ideas--the changing direction and evolvement of more creative thinking are part of human relationships. We must provide our counselors with the tools of the new technology as well as with a theoretical grasp of the field. We must be willing to innovate and to assimilate new techniques from outside of our previous repertoire. How far does your "openness" as counselors or counselor education extend--to individuals and beyond to their feelings, ideas and behavior and beyond that to their creativity or is it confined only to feelings. We say counselors are concerned with the "whole person"--well does your behavior show that you are???

The counseling relationship based on commitment of two individuals or a group of individuals is most rewarding, stimulating and effective for all concerned but if we choose a closer introspection of the change and growth in the counseling field, we must recognize that our knowledge must be expanded not to be just "aware of" but to be "knowledgeable in use of" many theories and to be able to choose the most functional and therefore the most effective for us. In addition to this though comes the question that because what I am presently doing is working for me effectively does not mean that I should put on dark glasses and never see what else is going on around me. In a counseling relationship do you discard and ignore everything the client says that you do not like or fit into your little world or do you make it work for you--take a close look at your behavior in that situation (what you are doing is important!) and then relate this experience with what we have been talking about today--"New Technology and Innovations for Counselor Education." If I do not look, continuously, evaluate, try new ideas, I will cease to grow but the rest of the fields will not. Learning, special education, psychology will leave us in our little offices behind our dark glasses.

It would seem, then, that we have a choice. Either we can grow and change with the new technology and better serve our publics, or we can watch others use these innovations to provide services which we are unable or unwilling to provide. If we choose the alternative of growth and change, then we must make our programs and OURSELVES functional as well as theoretical. We must provide the tools of new technology as well as the theoretical grasp of what these tools can do for us. We must be willing to innovate and to assimilate new techniques from outside of our previous repertoire. The challenge of tomorrow is the reality of the need to interweave the counseling relationship with the emerging technology for constructive and humanistic goals.